

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

- 1 1. (Currently amended) A method for selectively auditing accesses to a
2 relational database, comprising:
3 receiving a query for the relational database;
4 selectively auditing an access to the relational database,
5 wherein selectively auditing the access involves
6 automatically modifying the query prior to processing the query, so
7 that processing the query causes an audit record to be created and
8 recorded only for rows in relational tables that are accessed by the
9 query and that satisfy an auditing condition,
10 wherein satisfying the auditing condition allows selective
11 auditing of the query and not for other rows,
12 wherein the auditing condition ~~specifies condition~~ specifies a
13 condition based on a value of a field in a row in the ~~relation~~
14 relational database, and
15 wherein satisfying the auditing condition allows selective
16 auditing of the query,
17 wherein if the query includes a select statement, inserting a
18 case statement into the select statement that calls a function that
19 causes the audit record to be created and recorded if the auditing
20 condition is satisfied,
21 wherein ~~if the~~ inserting the case statement into the query

22 further comprises:
23 inserting the case statement into the query;
24 allowing a query processor to allocate buffer for the
25 query;
26 removing the case statement from the query;
27 allowing the query processor to generate a query plan
28 for the query; and
29 scheduling the case statement near the end of the
30 query plan to ensure that the case statement is evaluated only
31 after other conditions of the query are satisfied, so that the
32 auditing record is created only for rows that are actually
33 accessed by the query;
34 processing the modified query to produce a query result, wherein processing
35 the modified query includes,
36 creating the auditing records for rows in relational tables that
37 ~~are access-~~accessed by the query and that ~~satisfying-~~satisfy the
38 auditing condition, and
39 recording the audit record in an audit record store; and
40 returning the query result.

1 2. (Canceled).

1 3. (Previously presented) The method of claim 1, further comprising
2 ensuring that the case statement is evaluated near the end of the query processing so
3 that the case statement is evaluated only after other conditions of the query are
4 satisfied.

1 4. (Canceled).

1 5. (Original) The method of claim 1, wherein if the query modifies at least
2 one entry in the relational database, using a relational database system trigger to
3 create and record the audit record for the modification to the relational database.

1 6. (Canceled).

1 7. (Original) The method of claim 1, wherein the audit record includes:
2 a user name for a user making the query;
3 a time stamp specifying a time of the query; and
4 a text of the query.

1 8. (Original) The method of claim 1, wherein the auditing condition
2 includes a condition for a field within the relational database.

1 9. (Previously presented) A computer-readable storage medium storing
2 instructions that when executed by a computer cause the computer to perform a
3 method for selectively auditing accesses to a relational database, the method
4 comprising:

5 receiving a query for the relational database;
6 selectively auditing an access to the relational database,
7 wherein selectively auditing the access involves
8 automatically modifying the query prior to processing the query, so
9 that processing the query causes an audit record to be created and
10 recorded only for rows in relational tables that are accessed by the
11 query and that satisfy an auditing condition,
12 wherein satisfying the auditing condition allows selective
13 auditing of the query and not for other rows,
14 wherein the auditing condition ~~specifies condition~~ specifies a
15 condition based on a value of a field in a row in the ~~relation~~
16 relational database, and

17 wherein satisfying the auditing condition allows selective
18 auditing of the query,
19 wherein if the query includes a select statement, inserting a
20 case statement into the select statement that calls a function that
21 causes the audit record to be created and recorded if the auditing
22 condition is satisfied, ~~wherein if the inserting the case statement into~~
23 ~~the query further comprises: inserting the case statement into the~~
24 ~~query, wherein if the query includes a select statement, inserting a~~
25 ~~case statement into the select statement that calls a function that~~
26 ~~causes the audit record to be created and recorded if the auditing is~~
27 ~~satisfied,~~
28 wherein ~~if the inserting the case statement into the query~~
29 further comprises:
30 inserting the case statement into the query;
31 allowing a query processor to allocate buffer
32 for the query;
33 removing the case statement from the query;
34 allowing the query processor to generate a
35 query plan for the query; and
36 scheduling the case statement near the end of
37 the query plan to ensure that the case statement is
38 evaluated only after other conditions of the query are
39 satisfied, so that the auditing record is created only
40 for rows that are actually accessed by the query;
41 processing the modified query to produce a query result, wherein processing
42 the modified query includes:
43 creating the auditing records for rows in relational tables that
44 are ~~access~~ accessed by the query and that ~~satisfying~~ satisfy the
45 auditing condition, and
46 recording the audit record in an audit record store; and

47 returning the query result.

1 10. (Canceled).

1 11. (Previously presented) The computer-readable storage medium of claim
2 9, wherein the method further comprises ensuring that the case statement is
3 evaluated near the end of the query processing to that the case statement is
4 evaluated only after other conditions of the query are satisfied.

1 12. (Original) The computer-readable storage medium of claim 9, wherein
2 the method further comprises retrieving the auditing condition for a given table
3 from a data structure associated with the given table.

1 13. (Original) The computer-readable storage medium of claim 9, wherein if
2 the query modifies at least one entry in the relational database, the method further
3 comprises using a relational database system trigger to create and record the audit
4 record for the modification to the relational database.

1 14. (Canceled).

1 15. (Original) The computer-readable storage medium of claim 9, wherein
2 the audit record includes:
3 a user name for a user making the query;
4 a time stamp specifying a time of the query; and
5 a text of the query.

1 16. (Original) The computer-readable storage medium of claim 9, wherein
2 the auditing condition includes a condition for a field within the relational database.

1 17. (Previously presented) An apparatus that selectively audits accesses to a

2 relational database, comprising:
3 a receiving mechanism configured to receive a query for the relational
4 database;
5 a selective auditing mechanism configured to selectively auditing audit an
6 access to the relational database,
7 wherein selectively auditing the access involves
8 automatically modifying the query prior to processing the query, so
9 that processing the query causes an audit record to be created and
10 recorded only for rows in relational tables that are accessed by the
11 query and that satisfy an auditing condition,
12 wherein satisfying the auditing condition allows selective
13 auditing of the query and not for other rows,
14 wherein the auditing condition ~~specifies condition~~ specifies a
15 condition based on a value of a field in a row in the ~~relation~~
16 relational database, and
17 wherein satisfying the auditing condition allows selective
18 auditing of the query,
19 wherein if the query includes a select statement, inserting a
20 case statement into the select statement that calls a function that
21 causes the audit record to be created and recorded if the auditing
22 condition is satisfied, ~~wherein if the inserting the case statement into~~
23 ~~the query further comprises: inserting the case statement into the~~
24 ~~query, wherein if the query includes a select statement, inserting a~~
25 ~~case statement into the select statement that calls a function that~~
26 ~~causes the audit record to be created and recorded if the auditing is~~
27 ~~satisfied,~~
28 wherein ~~if the inserting the case statement into the query~~
29 further comprises:
30 inserting the case statement into the query,;
31 allowing a query processor to allocate buffer

32 for the query;
33 removing the case statement from the query;
34 allowing the query processor to generate a
35 query plan for the query;
36 and scheduling the case statement near the
37 end of the query plan to ensure that the case statement
38 is evaluated only after other conditions of the query
39 are satisfied, so that the auditing record is created
40 only for rows that are actually accessed by the query;
41 A-a query processor that is configured to process the modified query to
42 produce a query result, wherein processing the modified query includes;
43 creating the auditing records for rows in relational tables that
44 are ~~access~~ accessed by the query and that ~~satisfying~~ satisfy the
45 auditing condition, and
46 recording the audit record in an audit record store; and
47 A-a returning mechanism that is configured to return the query result.

1 18. (Canceled).

1 19. (Previously presented) The apparatus of claim 17, wherein the query
2 modification mechanism is configured to ensure that the case statement is evaluated
3 near the end of the query processing so that the case statement is evaluated only
4 after other conditions of the query are satisfied.

1 20. (Original) The apparatus of claim 17, wherein the query modification
2 mechanism is configured to retrieve the auditing condition for a given table from a
3 data structure associated with the given table.

1 21. (Original) The apparatus of claim 17, wherein if the query modifies at
2 least one entry in the relational database, the apparatus uses a relational database

3 system trigger to create and record the audit record for the modification to the
4 relational database.

1 22. (Canceled).

1 23. (Original) The apparatus of claim 17, wherein the audit record includes:
2 a user name for a user making the query;
3 a time stamp specifying a time of the query; and
4 a text of the query.

1 24. (Original) The apparatus of claim 17, wherein the auditing condition
2 includes a condition for a field within the relational database.

1 25. (New) The method of claim 1, further comprising retrieving the auditing
2 condition for a given table from a data structure associated with the given table.

1 26. (New) A method for selectively auditing accesses to a relational
2 database, comprising:
3 receiving a database operation for the relational database;
4 selectively auditing an access to the relational database based on an
5 auditing condition, wherein the auditing condition specifies a condition based on a
6 value of a field in a row in the relation database;
7 processing the database operation to produce a database operation result,
8 wherein processing the database operation includes:
9 creating the auditing records for rows in relational tables
10 that are accessed by the database operation, and that satisfy the
11 auditing condition, and
12 recording the audit record in an audit record store; and
13 returning the database operation result.

1 27. (New) The method of claim 26,
2 wherein selectively auditing the access involves automatically modifying
3 the database operation prior to processing the database operation;
4 wherein processing the database operation causes an audit record to be
5 created and recorded only for rows in relational tables that are accessed by the
6 database operation and that satisfy an auditing condition;
7 wherein satisfying the auditing condition allows selective auditing of the
8 database operation and not for other rows;
9 wherein satisfying the auditing condition allows selective auditing of the
10 database operation;
11 wherein if the database operation includes a select statement, inserting a
12 case statement into the select statement that calls a function that causes the audit
13 record to be created and recorded if the auditing condition is satisfied; and
14 wherein if inserting the case statement into the database operation further
15 comprises inserting the case statement into the database operation:
16 allowing a database operation processor to allocate buffer
17 for the database operation,
18 removing the case statement from the database operation,
19 allowing the database operation processor to generate a
20 database operation plan for the database operation, and
21 scheduling the case statement near the end of the database
22 operation plan to ensure that the case statement is evaluated only
23 after other conditions of the database operation are satisfied, so that
24 the auditing record is created only for rows that are actually
25 accessed by the database operation.

1 28. (New) The method of claim 27, wherein the auditing condition
2 includes a condition for at least two fields within the relational database.

1 29. (New) A computer-readable storage medium storing instructions that
2 when executed by a computer cause the computer to perform a method for
3 selectively auditing accesses to a relational database, the method comprising:
4 receiving a database operation for the relational database;
5 selectively auditing an access to the relational database based on an
6 auditing condition, wherein the auditing condition specifies a condition based on a
7 value of a field in a row in the relation database;
8 processing the database operation to produce a database operation result,
9 wherein processing the database operation includes:
10 creating the auditing records for rows in relational tables
11 that are accessed by the database operation, and that satisfy the
12 auditing condition, and
13 recording the audit record in an audit record store; and
14 returning the database operation result.

1 30. (New) The computer-readable storage medium of claim 29,
2 wherein selectively auditing the access involves automatically modifying
3 the database operation prior to processing the database operation;
4 wherein processing the database operation causes an audit record to be
5 created and recorded only for rows in relational tables that are accessed by the
6 database operation and that satisfy an auditing condition;
7 wherein satisfying the auditing condition allows selective auditing of the
8 database operation and not for other rows;
9 wherein satisfying the auditing condition allows selective auditing of the
10 database operation;
11 wherein if the database operation includes a select statement, inserting a
12 case statement into the select statement that calls a function that causes the audit
13 record to be created and recorded if the auditing condition is satisfied; and

14 wherein if inserting the case statement into the database operation further
15 comprises inserting the case statement into the database operation:
16 allowing a database operation processor to allocate buffer
17 for the database operation,
18 removing the case statement from the database operation,
19 allowing the database operation processor to generate a
20 database operation plan for the database operation, and
21 scheduling the case statement near the end of the database
22 operation plan to ensure that the case statement is evaluated only
23 after other conditions of the database operation are satisfied, so that
24 the auditing record is created only for rows that are actually
25 accessed by the database operation.

1 31. (New) The computer-readable storage medium of claim 30, wherein
2 the auditing condition includes a condition for at least two fields within the
3 relational database.

1 32. (New) An apparatus for selectively auditing accesses to a relational
2 database, comprising:
3 a receiving mechanism configured to receive a database operation for the
4 relational database;
5 a selective auditing mechanism configured to selectively audit an access to
6 the relational database based on an auditing condition, wherein the auditing
7 condition specifies a condition based on a value of a field in a row in the relation
8 database;
9 a processing mechanism configured to process the database operation to
10 produce a database operation result;
11 a creating mechanism configured to create the auditing records for rows in

12 relational tables that are accessed by the database operation, and that satisfy the
13 auditing condition, and
14 a recording mechanism configured to record the audit record in an audit
15 record store; and
16 a returning mechanism configured to return the database operation result.

1 33. (New) The apparatus of claim 32,
2 wherein selectively auditing the access involves automatically modifying
3 the database operation prior to processing the database operation;
4 wherein processing the database operation causes an audit record to be
5 created and recorded only for rows in relational tables that are accessed by the
6 database operation and that satisfy an auditing condition;
7 wherein satisfying the auditing condition allows selective auditing of the
8 database operation and not for other rows;
9 wherein satisfying the auditing condition allows selective auditing of the
10 database operation;
11 wherein if the database operation includes a select statement, inserting a
12 case statement into the select statement that calls a function that causes the audit
13 record to be created and recorded if the auditing condition is satisfied; and
14 wherein if inserting the case statement into the database operation further
15 comprises inserting the case statement into the database operation:
16 allowing a database operation processor to allocate buffer
17 for the database operation,
18 removing the case statement from the database operation,
19 allowing the database operation processor to generate a
20 database operation plan for the database operation, and
21 scheduling the case statement near the end of the database
22 operation plan to ensure that the case statement is evaluated only

23 after other conditions of the database operation are satisfied, so that
24 the auditing record is created only for rows that are actually
25 accessed by the database operation.

1 34. (New) The apparatus of claim 33, wherein the auditing condition
2 includes a condition for at least two fields within the relational database.